UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,535	12/09/2003	Alexei A. Karve	IBM-267	4563

7590	11/20/2006

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EXAMINER
ONI, OLUBUSOLA

ART UNIT	PAPER NUMBER
2168	

DATE MAILED: 11/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/731,535	KARVE ET AL.
	Examiner	Art Unit	
	OLUBUSOLA ONI	2168	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 August 2006*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   The amendment filed August 31, 2006 has been entered. Claims 1, 10, 18, 19,

28 have been amended.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section

122(b), by another filed in the United States before the invention by the applicant for

patent or (2) a patent granted on an application for patent by another filed in the United

States before the invention by the applicant for patent, except that an international

application filed under the treaty defined in section 351(a) shall have the effects for

purposes of this subsection of an application filed in the United States only if the

international application designated the United States and was published under Article

21(2) of such treaty in the English language.

3.   Claims 1-36 are rejected under 35 U.S.C. 102(e) as being anticipated by

Vagnozzi, Paul (Pub No. 2003/0135495) hereinafter "Vagnozzi"

For claim 1, Vagnozzi teaches "An article of manufacture comprising computer usable

medium having computer readable program code means embodied therein for causing

a relationship to be implemented within a database using BitSets, the computer

readable program means in said article of manufacture comprising computer readable

program code means for causing a computer to effect (See paragraph [0139])

"defining a database scheme" (See paragraph [0001-0010])

"quantify a relationship among a plurality of entities"(See paragraph [0005-0006], [0010-

0011] and [0014])

"populate said database with instances of relationships among said entities and

concurrently populating said database with Bitsets, inserts, delets and/or changes there

being, constraints on the number of keys in the Bitset to allow database integrity thus

disallowing incorrect relationship data from being entered into said database"(See

paragraph [0006, [0013-0014], [0036], [0062])

"submitting a query for desired information so that said database performs evaluation of

said query using said Bitsets, said Bitset being of variable length ad populated based

upon associations said query processing being independent of data vaules (See

paragraph [0040-0048])

"database generates a resultant set"(See paragraph [0047-0049])

"resultant set returned to a requestor"(See paragraph [0003], [0036-0038])

"repeat D through F until a recursive association under consideration for said resultant set is exhausted said steps for causing a relationship to be implemented within said database using Bitsets being free of indexing"(See paragraph[00182], [0292])

For claim 2, Vagnozzi teaches "the computer readable program code means in said article of manufacture further comprising computer readable program code means for causing a computer to effect an independent query to said database and said data base transforms said query to a bit set query" (See paragraph [0048])

For claim 3, Vagnozzi teaches "the computer readable program code means in said article of manufacture further comprising computer readable program code means for causing a computer to effect the use of BitSets, said BitSets being selected from the group consisting of User Defined Type BitSets and fast User defined functions" (See paragraph [0005-0006], [0048], [0139], [0185], [0285])

For claim 4, Vagnozzi teaches "the computer readable program code means in said article of manufacture further comprising computer readable program code means for causing a computer to effect, if the relationship in said database comprises one or more levels of inheritance relationships, the aggregation of inheritance bitsets through forward and/or backward propagation" (See paragraph [0005-0006])

For claim 5, Vagnozzi teaches "the computer readable program code means in said article of manufacture further comprising computer readable program code means for causing a computer to effect, if the relationship in said database comprises one or more levels of boolean expression relationships, the generation of boolean expression bitsets through forward and/or backward propagation"(See paragraph [0004], [0008], [0047], [0149])

For claim 6, Vagnozzi teaches "the computer readable program code means in said article of manufacture further comprising computer readable program code means for causing a computer to effect the use of fast User Defined Functions, said fast User Defined Functions being selected from the group consisting of scalar functions and column functions" (See paragraph [0059],[0193-0197], [0238], [0269], [0310])

For claim 7, Vagnozzi teaches "the computer readable program code means in said article of manufacture further comprising computer readable program code means for causing a computer to effect the use of scalar functions" (See paragraph [0310], [0445])

For claim 8, Vagnozzi teaches "the computer readable program code means in said article of manufacture further comprising computer readable program code means for causing a computer to effect the use of scalar functions said scalar functions selected from the group consisting of BSGetLength(BITSET), BSInitO, BSInit(BIGINT,BIGINT), BSSetBit(BitSet, BIGINT), BSClearBit(BitSet, BIGINT), BSGetBit(BIGINT),

BSAnd(BitSet,BitSet), BSOr(BitSet, BitSet), BSEquals(BitSet, BitSet), BSMinus(BitSet,

BitSet), BSAndEquals(BitSet, BitSet), BSAndIsEmpty(BitSet, BitSet), BSGetBitAt(BitSet,

BIGINT), BSGetUpperBound(BitSet), BSGetLowerBound(BitSet)" (See paragraph

[0005-0006])

For claim 9, Vagnozzi teaches "the computer readable program code means in said

article of manufacture further comprising computer readable program code means for

causing a computer to effect the use of column functions" (See paragraph [0059],

[0193], [0197])

For claims 10-18, these claims are rejected on grounds corresponding to the arguments

given above for rejected claims 1-9 and are similarly rejected.

For claims 19-27, these claims are rejected on grounds corresponding to the arguments

given above for rejected claims 1-9 and are similarly rejected.

For claims 28-36, these claims are rejected on grounds corresponding to the arguments

given above for rejected claims 1-9 and are similarly rejected.

Response to Amendment

4.   Applicant's argument filed August 31, 2006 has been fully considered but they

are not persuasive. The examiner respectfully traverses applicant's arguments.

As per claim 1, applicant argued that Vagnozzi does not teach "an article of

manufacture comprising computer usable medium having computer readable program

code means embodied therein for causing a relationship to be implemented within a

database using BitSets, the computer readable program means in said article of

manufacture comprising computer readable program code means for causing a

computer to effect". On the contrary Vagnozzi teaches at paragraph 0139, an article of

manufacture comprising computer usable medium having computer readable program

code means embodied therein for causing a relationship to be implemented within a

database using BitSets, the computer readable program means in said article of

manufacture comprising computer readable program code means for causing a

computer to effect. Wherein a database indexing method where there is a need to

create target keys for slice and attribute data values, wherein Bit vectors to identify

records containing a particular item of data value, however, bit vectors can be used for

each data value, and bit vectors are synonymous to bit sets.

Applicant also argued that Vagnozzi does not teach "quantify a relationship among a

plurality of entities". On the contrary Vagnozzi teaches in paragraph 0010-0011 using

index associated with different attributes and each index associated with data values,

wherein bit vectors can be used for each data value, and bit vectors are synonymous to

bit sets. Applicant also argued that Vagnozzi does not teach "submitting a query for

desired information so that said database performs evaluation of said query using said

Bitsets, said Bitset being of variable length ad populated based upon associations said

query processing being independent of data vaules". On the contrary Vagonzzi teaches

at paragraph 0040-0048, submitting a query for desired information so that said

database performs evaluation of said query using said Bitsets, said Bitset being of

variable length ad populated based upon associations said query processing being

independent of data vaules. Applicant also argued that Vagnozzi does not teach,

"database generates a resultant set and resultant set returned to a requestor". On the

contrary Vagnozzi teaches at paragraph 0047-0049, database generates a resultant set

and at paragraph 0003, 0036-0038 resultant set returned to a requestor. Vagonzzi also

teaches at paragraph 00182 and 0292, repeat D through F until a recursive association

under consideration for said resultant set is exhausted said steps for causing a

relationship to be implemented within said database using Bitsets being free of

indexing.

As per claim 2, applicant argued that Vagnozzi does not teach "the computer readable

program code means in said article of manufacture further comprising computer

readable program code means for causing a computer to effect an independent query to

said database and said data base transforms said query to a bit set query". On the

contrary Vagnozzi teaches at paragraph 0048, the computer readable program code

means in said article of manufacture further comprising computer readable program

code means for causing a computer to effect an independent query to said database

and said data base transforms said query to a bit set query.

As per claim 3, applicant argued that Vagnozzi does not teach "the computer readable

program code means in said article of manufacture further comprising computer

readable program code means for causing a computer to effect the use of BitSets, said

BitSets being selected from the group consisting of User Defined Type BitSets and fast

User defined functions". On the contrary Vagnozzi teaches at 0005-0006, 0048, 0139,

0185, 0285, the computer readable program code means in said article of manufacture

further comprising computer readable program code means for causing a computer to

effect the use of BitSets, said BitSets being selected from the group consisting of User

Defined Type BitSets and fast User defined functions.

As per claim 4, applicant argued that Vagnozzi does not teach "the computer readable

program code means in said article of manufacture further comprising computer

readable program code means for causing a computer to effect, if the relationship in

said database comprises one or more levels of inheritance relationships, the

aggregation of inheritance bitsets through forward and/or backward propagation". On

the contrary Vagnozzi teaches 0005-0006 the computer readable program code means

in said article of manufacture further comprising computer readable program code

means for causing a computer to effect, if the relationship in said database comprises

one or more levels of inheritance relationships, the aggregation of inheritance bitsets

through forward and/or backward propagation.

As per claim 5, applicant argued that Vagnozzi does not teach "the computer readable

program code means in said article of manufacture further comprising computer

readable program code means for causing a computer to effect, if the relationship in

said database comprises one or more levels of boolean expression relationships, the

generation of boolean expression bitsets through forward and/or backward

propagation". On the contrary at paragraph 0004, 0007-0008, 0047, 0149 Vagnozzi

teaches the computer readable program code means in said article of manufacture

further comprising computer readable program code means for causing a computer to

effect, if the relationship in said database comprises one or more levels of boolean

expression relationships, the generation of boolean expression bitsets through forward

and/or backward propagation. Vagnozzi's teachings include the use of bit vectors

simplifies the processing of boolean expressions since two bit vectors can be combined

in accordance with the specified boolean operators and the resulting bit vector

represents the records that satisfy the boolean expressions, the boolean expressions

are also associated with levels of bits.

As per claim 6, applicant argued Vagnozzi does not teach "the computer readable

program code means in said article of manufacture further comprising computer

readable program code means for causing a computer to effect the use of fast User

Defined Functions, said fast User Defined Functions being selected from the group

consisting of scalar functions and column functions". On the contrary at paragraph

0059,0193-0197, 0238, 0269, 0310 Vagnozzi teaches the computer readable program

code means in said article of manufacture further comprising computer readable

program code means for causing a computer to effect the use of fast User Defined

Functions, said fast User Defined Functions being selected from the group consisting of

scalar functions and column functions.

As per claim 7, applicant argued Vagnozzi does not teach "the computer readable

program code means in said article of manufacture further comprising computer

readable program code means for causing a computer to effect the use of scalar

functions". On the contrary Vagnozzi teaches at paragraph 0310, 0445, the computer

readable program code means in said article of manufacture further comprising

computer readable program code means for causing a computer to effect the use of

scalar functions.

As per claim 8, applicant argued Vagnozzi does not teach "the computer readable

program code means in said article of manufacture further comprising computer

readable program code means for causing a computer to effect the use of scalar

functions said scalar functions selected from the group consisting of

BSGetLength(BITSET), BSInitO, BSInit(BIGINT,BIGINT), BSSetBit(BitSet, BIGINT),

BSClearBit(BitSet, BIGINT), BSGetBit(BIGINT), BSAnd(BitSet,BitSet), BSOr(BitSet,

BitSet), BSEquals(BitSet, BitSet), BSMinus(BitSet, BitSet), BSAndEquals(BitSet,

BitSet), BSAndIsEmpty(BitSet, BitSet), BSGetBitAt(BitSet, BIGINT),

BSGetUpperBound(BitSet), BSGetLowerBound(BitSet)". On the contrary Vagnozzi

teaches at paragraph 0005-0006, the computer readable program code means in said

article of manufacture further comprising computer readable program code means for

causing a computer to effect the use of scalar functions said scalar functions selected

from the group consisting of BSGetLength(BITSET), BSInitO, BSInit(BIGINT,BIGINT),

BSSetBit(BitSet, BIGINT), BSClearBit(BitSet, BIGINT), BSGetBit(BIGINT),

BSAnd(BitSet,BitSet), BSOr(BitSet, BitSet), BSEquals(BitSet, BitSet), BSMinus(BitSet,

BitSet), BSAndEquals(BitSet, BitSet), BSAndIsEmpty(BitSet, BitSet), BSGetBitAt(BitSet,

BIGINT), BSGetUpperBound(BitSet), BSGetLowerBound(BitSet. Wherein Bit vectors to

identify records containing a particular item of data value, however, bit vectors can be

used for each data value, and bit vectors are synonymous to bit sets.

As per claim 9, applicant argued that Vagnozzi does not teach "the computer readable

program code means in said article of manufacture further comprising computer

readable program code means for causing a computer to effect the use of column

functions". On the contrary Vagonzzi teaches at 0059,0193, 0197, the computer

readable program code means in said article of manufacture further comprising

computer readable program code means for causing a computer to effect the use of

column functions.

CONCLUSION

5.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to OLUBUSOLA ONI whose telephone number is 571-

272-2738. The examiner can normally be reached on 7.30-5.00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, TIM VO can be reached on 571-272-3642. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-

272-1000.

OLUBUSOLA ONI
Examiner
Art Unit 2168